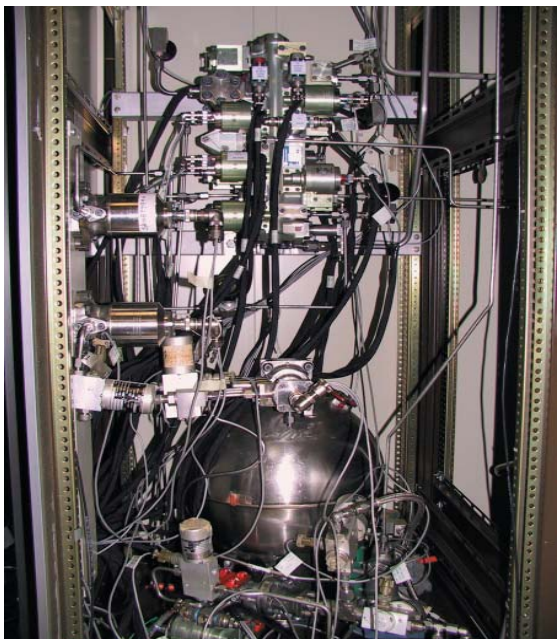
National Aeronautics and
Space Administration

Marshall Space Flight Center
Huntsville, AL 35812

Space Systems Department

Flight and Ground Software

The Flight and Ground Software Division consists of three branches; the Software Systems Engineering Branch, the Software Development Branch, and the Avionics and Software Ground Systems Test Branch. The Software Systems Engineering Branch manages the software requirements development, software processes and planning, and software formal verification activities. The Software Engineering Process Group (SEPG) lead also resides within this branch. The requirements and verification team develops and manages the software requirements and test activities, utilizing industry-standary tools. The Software Development Branch performs the flight software design and development activities, and provides the facilities for flight software development and test activities. The Ares I Upper Stage Software Development Facility (SDF) will support the development, test, integration, and verification of the flight computer (FC) and the Command and Telemetry computer (CTC) software. This branch also performs the insight tasks for software that is developed outside of the Flight and Ground Software Division.



≈ Leadership at all Levels ≈

Avionics & Software Ground Systems Test

The Avionics & Software Ground Systems Test Branch provides the development of the Ares I Upper Stage Software Integration and Test Facility (SITF) and the Ares I Systems Integration Laboratory (SIL), in support of the Ares I avionics and software verification and validation. The Ground Data Systems Team is developing the test operations control system (MAESTRO) and the Ares I Avionics hardware/software simulation system Integration Test Team supports three test facilities; Software Development Facility (SDF), Software Integration Test Facility (SITF), and Software Integration Laboratory (SIL). MAESTRO includes data handling, management of the test configuration, data archive and display of test data. ARTEMIS consists environmental and structural simulations, models of ARES subsystems, and models of Avionics components. The Integration Test Team will develop the necessary hardware/ software to interface simulated sensor data for the appropriate component.

Software Systems Engineering

The Software Systems Engineering Branch manages software development, develops software process improvements, develops/ manages software requirements and tests flight software.

This Branch consists of the Software Planning & Support Team and Requirement & Verification Team:

- The Software Planning & Support Team performs software management on organization projects. The software management includes the development of software plans and the management of schedules, action items, risks, change requests, and training. The team also performs software process improvement activities.

- Requirement & Verification Team performs requirements and test activities for organization projects. This team develops, analyze, and manage the flight software requirements and traceability. The team also develops and manages the test activities including analyzing software tools and development of test documentation.

Software Development

The Software Development Branch provides the facilities for software development, testing, and a simulation environment to perform unit test, inertial intergration, verification, and validation of Flight Software (FSW) for the Flight computer (FC) and Command and Telemetry Computer (CTC).

This Branch consists of two teams: the Flight Software Design Team and the Software Systems Team.

The Software Systems Team consists of two lines, the Development Line (DL) and the Integration and Test Line (ITL). The design, implementation, initial integration and unit test will be performed in the DL. The ITL provides integration and test facilities and equipment to perform formal software integration, verification, and validation of the FC and CTC software (Level IV and V software requirements.)

The Software Systems team performs configuration management and delivery of the Fligjt Computer and Telemetry Computer software.

All formal integration tested and verified FC and CTC software will be passed to the System Integration Laboratory for formal system simulation and test.

Point-of-Contact:
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